Summer 2006

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NSU Oceanographic Center

Nova Southeastern University
Oceanographic Center

Currents

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Center Researcher Studies Multiple Species Movements

Mahmood Shivji, Ph.D., director of the Guy Harvey Research Institute (GHRI), recently returned from setting up a field research study on fish behavior in St. Thomas, USVI. Shivji and his collaborator, Brad Wetherbee, Ph.D. (University of Rhode Island), are taking an ecosystem-approach by looking at habitat use and interaction of multiple species (sharks, stingrays, snappers, groupers, and barracuda) simultaneously by tracking their long-term movement patterns in a large bay that is also a nursery ground for some of these animals.

The movement behavior of the fishes is being examined by deploying underwater "listening" monitors that detect acoustic signals from transmitters surgically implanted in the fishes. This research will provide information on the habitat use patterns of these fishes, thereby allowing the design of more effective marine protected areas for the fishes' management and conservation. Populations of many of these fishes are declining rapidly due to overfishing and reef habitat destruction.

Shivji taking a DNA sample from a fin of a tiger shark

Shivji and Wetherbee suturing a tiger shark incision after implanting a transmitter in its body cavity

People on the Move

On July 14, **Edward O. Keith**, Ph.D., participated in a one-day embark aboard the guided missile destroyer, *USS Farragut* (DDG 99), out of Mayport, Florida. The purpose of the embark was to educate marine scientists and other concerned groups about a proposed Undersea Warfare Training Range (USWTR). There are three sites under consideration for the USWTR, one of which is off Jacksonville, Florida, in an area where North Atlantic right whales (*Eubalaena glacialis*) congregate and calve during the winter months. These whales are considered to be the most endangered species of whale in the North Atlantic, with an estimated population of only 300 animals.

The purpose of the trip was to highlight the measures the Navy is taking to protect marine life while developing the USWTR and to brief participants on the Protective Measures Assessment Protocol (PMAP), a set of standard measures that U.S. Navy ships undertake when operating in and around the Jacksonville Operations Area (JAX OPAREA) with reference to marine mammals.

While on board, Keith was briefed on the USWTR and the mitigation measures to be taken by the Navy, followed by a tour of the ship, including the bridge and bridge wings, the Combat Information Center (CIC), Sonar, and lookout stations. Subject matter experts from U.S. Fleet Forces Command were on board to provide information specific to USWTR and Navy sonar.

The *USS Farragut* is the 21st Flight IIA Arleigh Burke-class guided missile destroyer to be constructed and the fifth ship in the Navy named after Admiral David Glasgow Farragut. The *Farragut*, which was christened on July 23, 2005, is one of the first ships to have the Vertical Launch System (VLS) fully installed and operational. She has an Aegis Combat Radar System to locate and lock onto targets. The Farragut's home port will be Mayport, Florida, and she will be part of the Atlantic Fleet.

Northern Right Whale and calf

The USS Farragut

Charles Messing with senior author Sandra D. Brooke

In July, **Charles Messing**, Ph.D., attended the 11th International Deep-Sea Biology Symposium in Southampton, England, where he delivered a paper titled: "Exploration of Deep-Sea Coral Ecosystems Along the East Coast of Florida," co-authored by Sandra D. Brooke, Ph.D. (Florida Fish and Wildlife Research Institute); John K. Reed (Harbor Branch Oceanographic Institution); and R. Grant Gilmore, Ph.D. (Estuarine, Coastal and Ocean Science, Inc.). The paper described ongoing research funded by NOAA's Office of Ocean Exploration and other agencies. After the symposium, Messing spent a week at the Muséum national d'Histoire naturelle in Paris to continue a collaborative research project on Antarctic crinoids with curator Nadia Ameziane.

NCRI researchers **Sam Purkis**, Ph.D., and **Kevin Kohler**, senior programmer, attended the Coastal Zone Mapping and Imaging Lidar System (CZMIL) technical workshop held July 19–21 in Gulfport, Mississippi. Experts in remote sensing and Lidar from academia, government, military, and private corporations met to discuss the technical specifications and capabilities of the next generation of airborne Lidar instruments. It is hoped that new instrumentation will be able to produce not only coastline bathymetry data, but also environmental and ecological data of the water column in the nearshore zone, as well.

(Continued on page 3)

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The meeting contributes to an ongoing collaboration between NCRI and Optech International and precedes a field campaign scheduled for August in Key West. During this period, NCRI will make precise optical measurements of the seafloor at the time when an aircraft is passing overhead, using a laser to accurately resolve water depth at a rate of 3,000 measurements per second. Lidar is rapidly emerging as a cutting-edge technology with which to monitor coral reef habitats; and for this reason, NCRI is well poised to become a center of expertise for the application of the technology.

Advancing the Science of Limnology and Oceanography (ASLO) is the leading professional organization for researchers and educators in aquatic science worldwide. Global Challenges facing Oceanography and Limnology was the theme of the ASLO 2006 Summer Meeting, June 4–9 in Victoria, British Colombia, Canada, which three scientists and four graduate students from NSUOC and its internal National Coral Reef Institute (NCRI) attended.

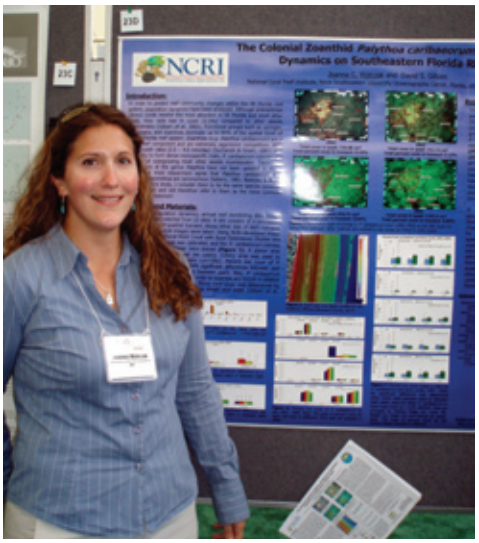
The following oral and poster presentations were given:

In the session "Coral Reef Ecosystem Research and Management Objectives," organized by scientists from the National Oceanic and Atmospheric Administration (NOAA) and National Ocean Service (NOS)

- Assistant Professor and NCRI Research Scientist **David S. Gilliam**, Ph.D., gave an oral presentation: "Long-Term Monitoring of a High-Latitude Coral Reef System off Southeast Florida, USA: A Partnership between Academia and Resource Management," co-authored by K. Banks (Broward County Environmental Protection Department); C. Beaver (Florida Wildlife Research Institute); C. Collier (Department of Environmental Protection); Richard E. Dodge, Ph.D. (Dean and NCRI Executive Director); L. Fisher (Broward County Environmental Protection Department); and Walter C. Jaap, Ph.D. (Florida Fish and Wildlife Conservation Commission).
- **Richard E. Dodge**, Ph.D., gave the oral presentation "Coral Reef Burial in Southeast Florida," co-authored by David S. Gilliam, Ph.D., and Ph.D. candidate Brian K. Walker.

(Left to Right) Brian Walker, Allison Moulding, Adrienne Carter, Joanna Walczak, David Gilliam (behind her), and Richard Dodge

- Ph.D. candidate **Vince P. Richards** gave the oral presentation "Genetic Connectivity and Biodiversity in Three Coral Reef Commensal Invertebrates and Their Host Sponge," co-authored by M.S. student Melissa DeBiasse and M. Shivji, Ph.D.
- M.S. student **Joanna Walczak** presented the poster "Population Dynamics and Spatial Competition of Colonial Zooanthids (*Palythoa Spp.*) on Southeastern Florida Reefs," co-authored by David S. Gilliam, Ph.D.



Joanna Walczak in front of her poster entitled "Population Dynamics and Spatial Competition of Colonial Zooanthids (Palythoa Spp.) on Southeastern Florida Reefs," co-authored by David S. Gilliam, Ph.D.

- Research Scientist **Allison Moulding**, Ph.D., presented the poster "Enhancement of Reef Restoration through Applied Science," co-authored by David S. Gilliam, Ph.D.; Vladimir Kosmynin, Ph.D. (Department of Environmental Protection); and Richard E. Dodge, Ph.D.

In the session entitled "Emerging Challenges for Aquatic Sciences"

- M.S. student and NCRI Administrative Assistant **Adrienne Carter** gave the oral presentation "A Spectral Modeling Strategy for the Analysis of Mixed Pixels, Broward County (Florida)," co-authored by Assistant Professor and NCRI Researcher Samuel J. Purkis, Ph.D.; J Goodman, Ph.D. (University of Puerto Rico); and Grady Tuell, Ph.D. (Optech International).

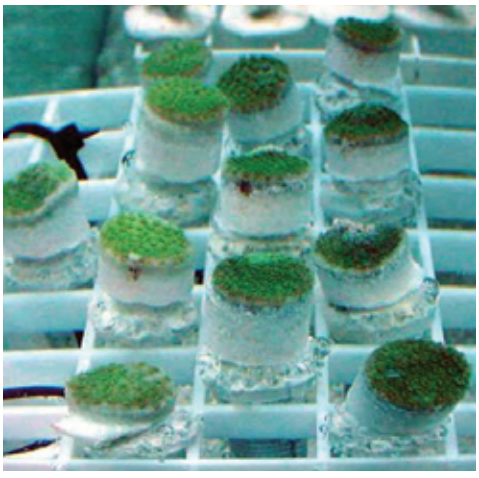
Adrienne Carter giving her talk

Other News

Bernhard Riegl, Ph.D., associate professor at NSUOC and associate director of the National Coral Reef Institute (NCRI), has been named the geology editor of the journal *Coral Reefs*. Riegl succeeds Peter Swart, Ph.D., who recently stepped down from this position. Riegl received his MSc degree from the University of Vienna (Austria) in 1989 and Ph.D. from the University of Cape Town (South Africa) in 1993. He also received the habilitation at Karl-Franzens-University Graz (Austria) in 2000. Riegl's research centers on coral reefs and other tropical benthic biota, such as seagrass and algae. He is both a biologist and geologist; his research and publications have involved the paleontology, sedimentology, spatial dynamics, ecology, taxonomy, and conservation biology of coral reefs and associated organisms. He is also active in hydrographic survey, particularly sonar-based seafloor discrimination, which he integrates with optical remote-sensing to provide high-resolution maps of the seafloor. He has worked in the Red Sea, Arabian Gulf, Indian Ocean, South Pacific, Eastern Pacific, tropical Atlantic, and Caribbean.

Bernard Riegl

Researchers from NSU's National Coral Reef Institute (NCRI), the University of Central Florida, College of Charleston, and Broward County's Department of Environmental Protection (DEP) have been working together on a $52,746 study funded by the Southeast Florida Coral Reef Initiative, a conservation agency, to discover whether sewage and other pollutants are damaging coral reefs that help protect coastal areas from storm surges. A two-year environmental study released last month concluded that coral reefs off the coast of Broward County are sick. Researchers suspect the culprit is the treated sewage released into that part of the ocean in Hollywood and Hillsboro Beach and, over the next two years, they will try to determine what is harming the coral reefs.



Porites astreoides plugs used in study

(Left to Right) Rolando Santos, Megan Bills, Melissa Champagne, Meghan Wilson, and Michele Blackburn (at the Museum of Discovery and Science World Ocean Day)

The members of the **Sea Turtle Conservation Program** participated in a number of environmental events throughout the year. On May 19, the group participated in an open house sponsored by the Hollywood Beach Public Works at the Hollywood Hills Elementary School. In June, they took part in the Museum of Discovery and Science World Ocean Day event.

The sea turtle project was awarded $5,000 in emergency funds by the Caribbean Conservation Corporation (CCC). The money was used for educational materials, including bumper stickers, table tents, door hangers, and activity books for distribution throughout the county.

Edward O. Keith, Ph.D., received a grant from the John H. Prescott Marine Mammal Rescue Assistance Grant Program, administered by the National Oceanic and Atmospheric Administration to study strandings of two poorly known species of small whales, the pygmy and dwarf sperm whales (*genus Kogia*). In response to a dramatic increase in Kogia strandings in the southeastern United States, the Working Group on Unusual Marine Mammal Mortality Events has requested more investigations of Kogia strandings and their causes, and Keith and his students will be examining the influence of El Niño and lunar cycles on historical Kogia strandings, as well as the effects of season, wind, and water movements.

MASTERCURRENTS
INSTITUTE OF MARINE AND COASTAL STUDIES

Fall 2006 Course Listings

M.S. degree specialties are marine biology, coastal zone management, marine environmental science, and physical oceanography. Each course carries three credit hours or may be audited. Tuition is $639 per credit hour (50 percent less for audit). Classes meet once a week from 6:30 to 9:30 p.m. at the Oceanographic Center (unless otherwise specified.) The fall term runs from Sept. 25–Dec. 15 (unless otherwise specified). Registration ($25 nonrefundable fee) is from Sept. 28–Sept. 28. For further information, call Richard Spieler or Melissa Dore at (954) 262-3610 or 800-396-2326, or email *imcs@nsu.nova.edu*. More information can be found at the center Web site at *www.nova.edu/ocean*.

Core Courses

MARINE ECOSYSTEMS
OCOR-5602
This class focuses on marine ecological processes and functions. The course is one of the five "core" requirements. An overview of the basic concepts of marine ecology will be provided, along with more detailed elements of the discipline, including diversity of organisms, feeding relationships, ecological roles, growth, and reproduction. Emphasis will be devoted to coastal marine communities.

Lab Fee: $35. Instructor: Curtis Burney, Ph.D. (*burney@nsu.nova.edu*). Meets Mondays.

CONCEPTS IN PHYSICAL OCEANOGRAPHY
OCOR-5601
This course covers basic ocean physics and is one of the five "core" course requirements. Topics include the physical properties of seawater, temperature and salinity structure of the oceans, major current patterns, waves and tides, influences of the wind, El Niño and tropical oceanography.

Lab Fee: $35. Instructor: Sean Kennan, Ph.D. (*skennan@nsu.nova.edu*). Meets Thursdays.

Ph.D. Degree Offered

The Oceanographic Center offers a doctoral degree in oceanography/marine biology. The program requires a minimum of 90 credits beyond the baccalaureate. At least 48 credits must consist of dissertation research, and at least 42 credits must consist of upper-level coursework. Required courses include the four M.S. core courses. Other upper-level coursework is usually in the tutorial mode with the major professor. Tuition is $4,365 per quarter.

BIOSTATISTICS I
OCOR-5603
This is a basic course on the practical applications of descriptive and inferential statistics with an emphasis on principles and methods of summarizing and analyzing biological data. It is designed for students who have never had a statistics course in college. Measures of central tendency, dispersion, and variability testing will be discussed,along with basic concepts of probability distributions, hypothesis testing, and decision making. Topics will also include simple statistical tests, analysis of variance (ANOVA), linear regression, and correlation.

Lab Fee: $35. Instructor: Mark Farber, Ph.D. (*mfarber@nsu.nova.edu*). Meets Tuesdays.

Electives

MARINE BIODIVERSITY
CZMT-0685/MEVS-5107/OCMB-6315
Diversity of life on earth is now being dramatically and irreversibly altered and reduced by human activities. Because so many species are still undescribed, and the ecological roles of those that have been named are so poorly understood, the magnitude of these changes is difficult to evaluate. This course will discuss multiple aspects of marine biodiversity including definition and importance of marine biodiversity to marine conservation issues, threats to marine biodiversity including non-indigenous species introductions, impediments to marine conservation, scientific constraints, developing tools and forums for conserving marine biodiversity, and evaluating existing and planned marine biodiversity initiatives. Management approaches such as marine protected areas, no-take or completely protected reserves, and special management areas will be discussed and evaluated.

Instructor: James Thomas, Ph.D. (*thomasjd@nsu.nova.edu*). Meets Wednesdays.

POPULATION ECOLOGY
CZMT-0688/MEVS-5250/OCMB-6323
Using a variety of marine and terrestrial organisms as examples, this course explores key concepts of population ecology and ventures into foundations of community and landscape ecology (time permitting). Students will learn how populations shrink and expand in concert with their own reproductive potential and environmental drivers; about the effects of predation and competition; how niche separation works; and how disturbances affect diversity, species packing, and spatial patterns. Students will be provided computational tools, focusing on Matlab, to describe or model simple population processes, thus providing an entry point towards more advanced theoretical and computational topics. The course puts emphasis on the theoretical and mathematical understanding of the issue and its computational implementation. A prior knowledge of basic algebra and calculus, as well as ecological, zoological, and statistical principles, is a definite advantage, although a brief review will be provided. Students will have to do homework, and a mid-term and final exam.

Lab Fee: $15. Instructor: Bernhard Riegl, Ph.D. (*rieglb@nsu.nova.edu*). Meets Thursdays.

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MSPO Courses

OCEAN CIRCULATION, MSPO-5050
This course follows Concepts in Fluid Mechanics by introducing the student to the applications of Geophysical Fluid Dynamics to the problem of ocean circulation. Topics include the equations of motion in the Earth (rotating) reference frame, geostrophy, thermal wind balance, quasigeostrophy, Ekman boundary layer, wind-driven circulation theories, abyssal circulation, ventilated thermocline, planetary waves, and equatorial dynamics. Equations will be derived and discussed, with a focus on understanding the ability to reproduce observations using theories.

Prerequisites: Concepts in Physical Oceanography and Concepts in Fluid Mechanics.

Instructor: Sean Kennan, Ph.D. (*skennan@nsu.nova.edu*). Meets: TBA.

CONCEPTS IN FLUID MECHANICS
MSPO-5000
This course introduces the principles of continuity, momentum, and energy applied to fluid motion. Topics include buoyancy, stability, and hydrostatics; ideal-fluid flow; laminar flow; turbulent flow in boundary layer and pipes; dimensional analysis; gravity waves; and flow in conduits and channels; applications to physical oceanography, coastal oceanography, and environmental sciences.

Instructor: Alexander Soloviev, Ph.D. (*soloviev@nsu.nova.edu*). Meets Wednesdays.

Distance Education

The following classes are scheduled for Fall 2006.

Marine Geology (for CZM only), OCOR-5604
Instructor: Bernhard Riegl, Ph.D. (*rieglb@nsu.nova.edu*)

Coastal Policy, CZMT-0612
Instructor: Steffen Schmidt, Ph.D. (*sschmidt@nsu.nova.edu*)

Environmental Remote Sensing (ERS) and Geographic Information Systems (GIS), CZMT-0655
Instructor: Sam Purkis, Ph.D. (*purkis@nsu.nova.edu*)

Chemical Biology of the Coastal Zone, CZMT-0676
Instructor: Veljko Dragojlovic, Ph.D. (*veljko@nsu.nova.edu*)

Coastal Pollution and Environmental Toxicology, CZMT-0806
Instructor: Don McCorquodale, Ph.D. (*mccorq@nsu.nova.edu*)

Biology of Sharks and Rays, CZMT-0671/OCUG-3400*
Instructor: Aiden Martin (*raiden@nsu.nova.edu*)
*For undergraduate and general interest credit only

Student Receives Grant to Pursue Studies

M.S. student **Meghan Bills** received a $2,500 scholarship from the Marine Technology Society to support her studies. She will analyze bottlenose dolphin population data collected by the NOAA Fisheries Southeast Fisheries Science Center in Miami and attend a distance sampling training workshop at the University of St. Andrews in Scotland. She also received a $250 Oceanographic Center Student Travel Scholarship for workshop-related costs.

Meghan Bills

Publications

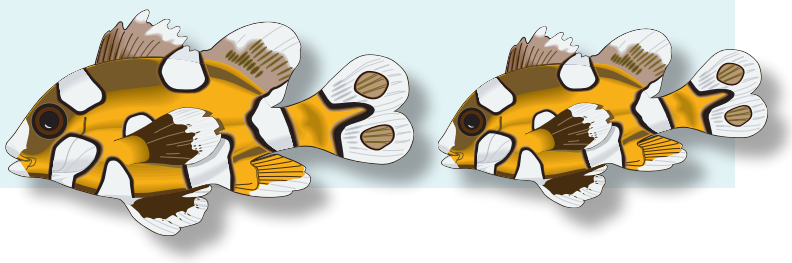
Hoelzel, A.R., **Shivji**, **M.S., J. Magnussen**, et al. 2006. Low worldwide genetic diversity in the basking shark. *Biology Letters*, Vol. 2 (3).

Jordan, L.K.B. and **R.E., Spieler**. 2006. Implications of natural variation of fish assemblages to coral reef management. *Proceedings of the 10th International Coral Reef Symposium*. Okinawa, Japan. June 28–July 2, 2004: 1391–1395.

Kohler, K.E. and **R.E. Dodge**. 2006. Visual HEA: Habitat Equivalency Analysis software to calculate compensatory restoration following natural resource injury. *Proceedings of the 10th International Coral Reef Symposium*. Okinawa, Japan: 1611–1616.

Riegl, B.M., Purkis, S.J., Kohler, K.E., and **R.E. Dodge**. 2006. Spatial patterns in Arabian Gulf coral assemblages (Jebel Ali, Dubai, U.A.E.) in response to temperature-forcing. *Proceedings of the 10th International Coral Reef Symposium*. Okinawa, Japan: 683–687.

Purkis, S.J., Riegl, B.M., and **R.E. Dodge**. 2006. Fractal patterns of coral communities: evidence from remote sensing. *Proceedings of the 10th International Coral Reef Symposium*. Okinawa, Japan. July 2004: 1753–1762.



Seminars and Defenses

Dissertation

Tomma Kay Barnes, "An Integrated Approach for Evaluation and Assessment of Ecosystem Management and Restoration." Committee Members: Frank Mazzotti, Ph.D., Chairman (University of Florida); Andrew Rogerson, Ph.D.; Richard Dodge, Ph.D.; G. Ronnie Best, Ph.D. (USGS); and Donald DeAngelis, Ph.D. (USGS)—June 20

Thesis

Melody J. White, "Distribution and Abundance of Scleractinian Disease in Broward County, Florida." Committee members: Bernhard Riegl, Ph.D.; Andrew Rogerson, Ph.D.; and Jay Fleisher, Ph.D. (NSU Health Professions Division)—June 23

Sarah L. Maurer, "Seasonal Trends and Factors Influencing Osprey, *Pandion Haliaetus*, Sightings in Port Everglades, Florida." Committee members: Edward O. Keith, Ph.D.; Curtis Burney, Ph.D.; and Brian Mealy (director, environmental science, Miami Museum of Sciences)—July 25

Adriana Sanchez Gomez, "Autecology and Baseline Surveys of Three Species of Submerged Aquatic Vegetation (SAV) in South Florida, *Halophila Johnsonii*, *Halophila Decipiens*, and *Alodule Wrightii*." Committee members: Edward O. Keith, Ph.D.; Andrew Rogerson, Ph.D.; Stacy Meyers, M.S. (South Florida Water Management District)—July 28

David Bryan, "Reef Fish Communities on Natural Substrate and Vessel-Reefs Along the Continental Shelf of Southeastern Florida between 50m and 120m Depth." Committee members: Richard Spieler, Ph.D.; David Gilliam, Ph.D.; and R. Grant Gillmore, Jr., Ph.D. (Estuarine, Coastal and Ocean Science, Inc.)—August 25

Capstone

Michele Morgado, "A Review of Coral Reef Diseases and Disease Management in the Caribbean." Committee members: James Thomas, Ph.D. and Bernhard Riegl, Ph.D.—June 19

Brian Shepard, "The State of Florida's Seagrasses: An Assessment of Planting Techniques and Management Strategy." Committee members: Richard Dodge, Ph.D. and Mike Robblee, Ph.D. (U.S. Geological Survey)

Tomma Kay Barnes

Melinda Bigelow, "Levels of Polycyclic Aromatic Hydrocarbons Archived Subcutaneous Blubber Samples in the Florida Manatee, (*Trichechus Manatus Latirostris*)." Committee members: Edward Keith, Ph.D.; Don McCorquodale, Ph.D.; and Jack Manock, Ph.D. (University of North Carolina, Wilmington)

Corinne Annunziata, "Applying Life History Traits of the Florida Manatee, *Trichechus Manatus Latirostris*, to Future Conservation." Committee members: Edward Keith, Ph.D. and Emily Schmitt, Ph.D. (NSU Farquhar Center)

Congratulations to our Graduates!

(Left to Right) Front row: Melissa Dore, Eileen Kelly, Kelly Logan, Volanirina Ramahery, Rebecca Raffel, Kristina Evans, and Karen Schanzle (Left to Right) Back row: William Baxley, Erin Haight-Hague, Jamie Monty, Elizabeth Lacey, and Rosa Laucci

Alumni News

Leah Motzko (2005), a graduate of the distance learning program, was hired as a natural resources fisheries specialist by Minnesota's Department of Natural Resources (DNR).

Motzko's job description

"A natural resources fisheries specialist performs professional fisheries management work, acting as a project leader for technicians and laborers involved in the implementation of a variety of professional and technical field management projects and activities; may function as project specialist on efforts devoted to fisheries management operations on a single major lake or function as a technical specialist within a region. These duties include the design, implementation, and supervision of projects."

Motzko's duties include

- *Coordinating lake and stream investigations so assessments are completed and data is available for management planning by advising the area supervisor on scope of survey, scheduling surveys, collecting data, analyzing results, formulating conclusions, and writing reports*
- *Coordinating the production and distribution of fish species, assisting the area supervisor in determining stocking program parameters, implementing egg taking and hatchery programs, assessing and acquiring fish rearing ponds, distributing fry, and harvesting and distributing fingerlings*
- *Developing and coordinating a public relations program to educate and inform the public by encouraging cooperation with projects, providing information on project parameters, consulting on problems, making presentations, and writing explanatory material*
- *Maintaining or overseeing maintenance of hatchery equipment, constructing or repairing equipment, and recommending needed equipment and materials*

Leah Motzko stocking muskie fry for the Minnesota DNR

- *Designing and implementing habitat improvement projects, evaluating existing habitat, designing methods for improving habitat, and supervising crews working on habitat projects*
- *Monitoring the use of aquatic pesticides, evaluating permit requests, supervising pesticide applications and investigating violations of laws regarding pesticide use*
- *Directing the work of laborers, technicians, and clerks; determining priorities, assigning work; evaluating work; purchasing materials, informing staff of developments, and recommending training*

Motzko's capstone was titled "An Overview of Beach Erosion and the Impacts of Coastal Development, with an Emphasis on the USA East Coast." We wish her well in her new position.

The Center Welcomes Two New Faculty and Staff Members

Wendy Wood, who replaces Carol Fretwell as the doordinator, administrative operations of the National Coral Reef Institute, has a B.S. in International Business, with German and marketing concentrations, from Auburn University. She spent 10 years in New York working in fashion marketing. After spending every vacation for nearly a decade on scuba diving trips, she decided to change career paths and pursue a future in marine conservation, which lead her to the University of Miami, from which she received an M.A. in marine affairs and policy from the Rosenstiel School of Marine and Atmospheric Science (RSMAS) in 2004. While at RSMAS, she spent a year surveying SCUBA divers and boaters in the Bahamas to determine user perceptions of the marine environment, willingness-to-pay for MPAs, and the role of divers and boaters in marine policy planning and management. Prior to joining NCRI, she worked as assistant director for the Yamaha Contender Miami Billfish Tournament, one of the largest non-profit off-shore fishing tournaments in the country.

J.S. Rehage, Ph.D., was hired as associate professor and has moved into her new office. Her research interests are in fish ecology, population and community ecology, behavioral ecology, biological invasions, and conservation. Rehage is interested in examining the effects of anthropogenic disturbance on the outcome of species interactions (such as predation and competition) and the implications of this at the individual, population, and community level. Biological invasions provide an excellent model system for the study of species interactions. Invasions bring into contact species that have no common evolutionary history, and therefore lack adaptive responses to an invader. Rehage is interested in examining how both the invader and members of the invaded community respond to and are affected by these novel interactions and by the ecological context in which they occur. Her current work focuses on the fish community

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Saying Farewell!

Sadly, we have recently said goodbye to two of our Center's faculty and staff members. In May, a luncheon was held for **Carol Fretwell**, coordinator of administration for the National Coral Reef Institute (NCRI). Fretwell stepped down to start her own business. With NCRI since 1998, Carol's friendliness and expertise will be missed.

In June, **Andrew Rogerson**, Ph.D., director of the Institute of Coastal Studies, said his farewells at a luncheon in his honor. He has since relocated in West Virginia to take over as dean of science at Marshall University. Rogerson had been with the institute since 1998, working with marine ekaryotic micro-organisms. He is a world authority on the identification of amoebae and was a contributor to the revised *Illustrated Guide to the Protozoa*. He took up the helm as director of the Coastal Studies program in 1999 and was involved in designing a new undergraduate environmental science studies degree that began in the fall of 2000. We wish Dr. Rogerson the best in his new endeavor.

(Left to Right) Melissa DeBiasse, Christine Powzer, Carol Fretwell, and Kevin Kohler

Carol Fretwell with librarian Kathy Maxson (Brian Buskirk is in the background.)

Andrew Rogerson talking to well-wishers at his luncheon

Andrew Rogerson cutting into the cake at his farewell luncheon

(Continued from page 8)

in freshwater and estuarine habitats of South Florida. Studies examine how this community is affected by hydrological alteration and by the presence of non-indigenous species, and how it may respond to ongoing Everglades restoration.

Rehage completed her Ph.D. in ecology at the University of Kentucky in Lexington. Prior to joining the Oceanographic Center, she was a postdoctoral researcher working with the U.S. Geological Survey, Florida International University, and Audubon of Florida on several Everglades fish projects.

Wendy Wood, coordinator

Jennifer Rehage in her new office

NOVA SOUTHEASTERN UNIVERSITY
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Currents, Summer 2006

Empress Hotel in Vancouver, British Columbia—site of ASLO meeting

Jennifer Rehage with snook

Editor: **Kathy Maxson**

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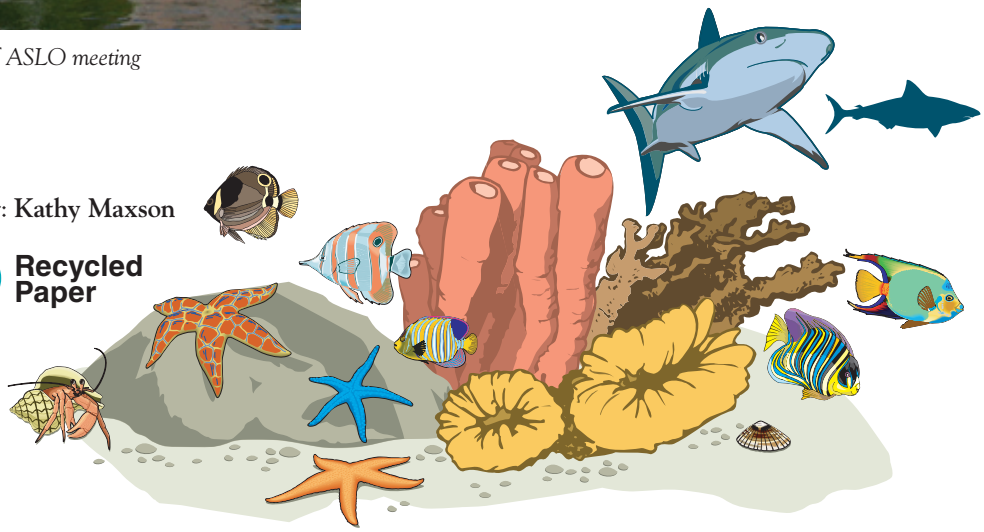

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